it does a set up sequence as indicated by the step **136** and then sequences to testing the run key at step **140**. If the run key is negative, the program recirculates back to the decision for the on/off key at step **130**. If it is on, then the program sequences to the sampling sequence **142**.

In FIG. **13**, there is shown a block diagram of the program sequence **134** shown in FIG. **12**. In the program sequence **134**, the decision step for selecting the pacing **144** is first taken. If flow pacing is selected, the program proceeds to step **148** for entering the flow interval and from there to the decision step **150** for determining if there are to be duplicate samples.

If the time decision is selected at the step for selecting pacing **144**, then the time interval is entered at step **146** and the program proceeds to the decision step **150** for determining if there are duplicate samples. If the answer to there being duplicate samples is yes, then the program for entering the numbers of the duplicates at step **152** is entered, after which the program proceeds to entering the number of samples at step **154**. If duplicate samples are not to be entered, then the program proceeds immediately to the step **154** for entering the number of samples. After completing the program for entering the number of samples at **154**, a sequence is performed to enter the start time at **156**.

In FIG. **14**, there is shown the subsequence **136** (FIG. **12**) for performing the set up sequence. As shown in this FIG. **14**, the sequence starts with the step **166** of entering line length. It proceeds to the step **168** of enable/disable duplicate samples and from there to the step **170** of enable/disable sample at start time.

After the steps **166**, **168** and **170** of entering beginning parameters, the I.D. number is entered at step **162**. From there, the program proceeds to the steps **172**, **176** and **180**, which are decision steps for setting the clock, running diagnostics and printing reports. If the clock is to be set, then the subroutine for entering new time and date at **174** is entered into. If the step for running the diagnostic is to be entered into, then step **178** is entered into for performing diagnostic routines and if the step to print reports at **180** is to be entered into, then the subsequence for **182** for sending sampling reports to the printer is entered into. Otherwise, the steps proceed in the sequence **172**, **176** and **180** as the operator defaults on those operations.

In FIG. **15**, the subsequence **142** (FIG. **12**) for sampling is shown, which subsequence proceeds through the substeps **200** for sample set up, to the substep for taking one sample at **202** and to the decision step **204** for determining if there are to be duplicate samples. If there are to be duplicate samples, then the decision step recirculates back to the sequence **202** for the next sample. If there are not to be duplicate samples, then the program proceeds to the subsequence for the number of samples at **206**. If a programmed number of samples has been taken, it returns to the stand-by state shown at **208**. Otherwise the sequence returns to **200**.

In FIG. **16**, there are shown the substeps for the sequence **200** (FIG. **15**) for sample set up. In this sequence, the first step **212** is a decision step for determining if its past the start time. If it is not, then the program recirculates back to the beginning of the step. If it is past the start time, the decision step **212** proceeds to the decision step **214** for determining if its time or flow pacing. This decision step may also be entered from the decision step **206** (FIG. **15**) as indicated at **210** (FIG. **18**). The time or flow pacing step **214** chooses either to proceed to step **220** which is a decision step for determining if the sample is at the start and is the first sample. Otherwise, it proceeds through the flow sequence to the decision **218** to determine if the flow interval has expired.

At step **220**, if the sample is the first sample and at the subsequence start, then it proceeds to step **224** for purging the sample line. If it is not, then it proceeds to the time interval expired step **222**. If this step is no, then it recirculates to the beginning of the step and if it is yes, it proceeds to step **224** for purging the sample line. If the flow pacing decision is made at step **214**, then it proceeds to the decision step determining if the flow is expired at **218**. If it is not, it recirculates back through that step and if it is, it proceeds to the purged sample line step at **224**.

In FIG. **17**, there is shown the subsequence for the step **202** for taking one sample. In this sequence, the first substep at **226** is to move to the next bottle, the second substep at **228** is to lower the needle assembly, the third substep at **230** is to start a pumping sample, the fourth substep at **232** is to raise the needle at the top of the bottle, the fifth substep at **234** is to pause, the sixth substep at **236** is to lower the needle, the seventh substep at **238** is to pause, the eighth substep at **240** is to raise the needle out of the bottle and the ninth substep at **242** is to move the needle to the top and stop the pump.

In FIG. **18**, there is shown the subsequence **206** for taking a number of samples (FIG. **15**) including first, the decision step **244** for determining if the rack reset key has been pressed. If it has, then the program proceeds to the sequence **246** for returning the bottle rack to home and from there to the step **208** for returning to the stand-by state. If the answer is no at the decision step for determining if the rack reset key has been depressed, then the program proceeds to step **248** for deciding if the required number of samples has been taken. If it has, then the program proceeds to the return to stand-by state **208**. If it hasn't, then it recirculates as shown at **210** to the subroutine **200** (FIG. **15**) for setting up the next sample.

From the above description, it can be understood that the sample collector of this invention has several advantages, such as: (1) it can obtain samples automatically and repeatedly without human intervention; and (2) it collects samples without the escape of any substantial amounts of volatile material in the liquid. Although a preferred embodiment of the invention has been described with some particularity, many modifications and variations of the invention are possible within the light of the above teachings. Therefore, it is to be understood that, within the scope of the appended claims, the invention may be practiced other than as specifically described.

What is claimed is:

1. A method of sampling liquid comprising the steps of:

drawing a sample of liquid from a source to be tested causing at least a portion of the sample of liquid to flow through a needle into a container having an interior portion and a passageway until the interior portion of the container overflows into the passageway;

removing the needle;

closing the container by rotating a valve at a closing location within the passageway automatically as the needle is withdrawn and while liquid of said sample is above the closing location; and

testing said sample.

2. A method according to claim **1** further including the step of causing liquid to flow through the needle as the needle is withdrawn.

3. The method of claim **1** in which the step of causing liquid to flow includes the step of opening the interior portion of the container and the step of opening the container includes the step of opening the container with means for